

# Aging Problem of the Patient Population on Maintenance Hemodialysis: An Important Issue for Clinical Nephrology to Focus Upon

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## Commentary

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**Abbreviations:** HD: Hemodialysis; ESRD: End Stage Renal Disease; CAPD: Continuous Ambulatory Peritoneal Dialysis; RRT: Renal Replacement Therapies; CKD: Chronic Kidney Disease; ISN: the International Society of Nephrology; ADL: Activities of Daily Living

Hemodialysis (HD) is now an indispensable medical treatment; it is very often introduced to treat end-stage renal disease (ESRD). Kidney transplantation and continuous ambulatory peritoneal dialysis (CAPD), which are other renal replacement therapies (RRT), have not markedly increased throughout the world, compared with HD. HD is typically more often selected; the number of maintenance HD patients has been steadily increasing and it has exceeded 2.2 million throughout the world. The United States Renal Data System (USRDS) revealed the percent change in the averaged ESRD incidence rates in 2013/14 versus that in 2001/02. According to that report, the greatest increases in the incidence of treated ESRD were reported for Thailand (1,009%), Bangladesh (643%), Russia (291%), the Philippines (190%), Malaysia (162%), the Republic of Korea (101%), and the Jalisco region of Mexico (93%) [1]. Many of these are emerging countries and developing Asian countries. Indeed, all of the physicians and nephrologists should think of appropriate measures to suppress or retard the progression of chronic kidney disease (CKD) to ESRD in these countries to decrease the patients who need HD as

well as to cut back the explosively increasing medical expenditure for HD. Fortunately, great efforts have been made without interruption to early detect CKD and more skillfully treat it to prevent ESRD thanks to various programs of the International Society of Nephrology (ISN) and the experts in these countries.

In addition to the challenge of reducing the number of newly introduced HD patients, there are various types of worldwide HD-associated problems to be resolved in the near future. I think that one of these important problems is “the aging problem of the patient population on maintenance HD”. According to 2016 USRDS Annual Data Report, the treated ESRD incidence was highest among patients aged 75 years or older in the majority of countries [1]. The highest rates in this age group were reported for Taiwan, with 2,784 PMP/year. This was twice the next highest rate as reported for the U.S., at 1,381 PMP/year, followed by Israel and Singapore, at 1,276 and 1,137 PMP/year. Japan where I’m working was ranked No. 8 in the ESRD incidence rate in the population aged 75 years and older among the countries with those data. In fact, it seems that nephrologists more often introduce HD in the highly aged patients compared to a few decades ago because Japan has one of the longest life expectancies in the world now and we have more chances to treat ESRD in the aged patients. Moreover, the prevalence rate of patients aged 75 years and older on

maintenance HD increased from 21.5% in 2005 to 32.0% in 2015 after 10 years in Japan [2,3]. What a great increase! I expect that aging of the HD patient population will certainly progress not only in other countries, such as US, Taiwan, Israel, and Singapore with higher overall life expectancy, but also in China and some other emerging and developing countries, for example in Asia, Eastern Europe and in South America. Therefore, I believe it an urgent necessity to take measures in advance against continuous aging of the HD patient population.

We surveyed the current situation of HD facilities for the aged patients on HD and PD in Japan, using the national scale questionnaires [4,5]. There might be some specific themes particular to Japan, but I believe the results will provide useful information which would be valuable for other countries that are in sync with Japan with respect to significant aging. Here I present the summary of the survey. We sent questionnaires to Japanese HD facilities nationwide, and obtained 1,524 responses (collection rate 40.2%) [4]. In Japan, there have been increasingly more HD facilities which pick and drop off the aged patients and those with physical handicaps free of charge before and after HD sessions. This free transportation is carried out presumably for assisting dependent aged patients, for obtaining more HD patients in the competitive areas and for some other reasons. It was found that 832 facilities provided pickup transportation for patients on maintenance HD. The number of HD patients using the pickup transportation was 28,715 in 811 HD facilities. We asked in the questionnaires whether pickup transportation was a burden or not. Consequently, for 77.1% of these facilities it was a great burden, but not for 19.8% of the facilities.

We also asked if there were HD patients who made use of indwelling catheters for blood access in each HD facility. Approximately one-third of the HD facilities (506 of 1,524) accepted HD patients who utilized indwelling HD catheters. As a rule, maintenance HD patients should come to HD facilities and go home by themselves for each HD session. If long-term hospitalized patients on HD markedly increase, the medical costs for total HD management might explosively expand and place the medical insurance system of Japan on the verge of bankruptcy. This is because the medical cost for all of the HD patients has been very expensive and it has already exceeded over 4% of the total medical expense in Japan [6]. According to our survey, 36.1% (550 of 1,524) HD facilities accepted long-term hospitalized HD patients without acute serious diseases, totaling 5,275 patients. In reality, there might be more than 10,000 hospitalized

patients on HD because the collection rate of this survey was only 40.2%. In Japan, the Long-Term Care Insurance System (a nursing-care insurance system) has been established to support aged persons with serious diseases, physical handicaps and cognition failure. There were 1,323 HD facilities which accepted any insured HD patients receiving long-term care. Only 123 HD facilities did not accept such patients on HD.

We also sent questionnaires to Japanese peritoneal dialysis (PD) facilities nationwide at the same time [5]. I also will discuss some of the summary of the PD survey. CAPD is much less frequently encountered in Japan, and slightly over 7,000 patients were on CAPD. It was found that 173 PD facilities (36.4%) followed up PD patients who were unable to individually perform PD without assistance. Those who assisted non-self-supported patients for PD were spouses (42.5%), sons or daughters (36.0%), nurses (15.0%) and so on. There were 88 facilities (38.5%) which had accepted long-term admission over 3 months for PD patients. According to the reported comments in the questionnaire, there were 2 outstanding opinions: 1) that it is necessary to further enhance the support system for PD patients at home, and 2) to increase the care facility or a similar facility to accept non-self-supported PD patients in addition to hospitals.

Based on these surveys, we could assess the current situation of the aged patients on HD as well as on PD in Japan, and we keenly recognize the importance of the aging problem of the dialysis population. We further held panel discussions on the support and the medical care for the aged patients on HD and PD with experienced nephrologists and professionals not only in Tokyo, but also in other local major cities. Through the survey mentioned above and the active discussions among experienced experts on dialysis working in various districts, I came to notice that there are problems which are universal or common to the whole nation and there are other problems which are regionally specific. For example, pickup transportation is unimaginably hard in limited areas with severe cold of Northern Hokkaido in winter, which one would not experience in southern warm districts. Moreover, the basic features of highly aged patients on HD greatly differ in their complications, intelligence, activities of daily living (ADL), family structure, living conditions, education, economic strengths, and so on. A small portion of aged patients on HD can support themselves even over the age of 80 years old, eating, driving, studying, and traveling without any assistance from another person. Conversely, some of the

aged patients on HD constantly need some assistance from other persons even when as young as in their 70's, for those not walking by themselves, not eating alone, not shopping due to physical disabilities and/or cognition failure. In short, each respective problem of the aged patients on HD might vary one by one as well as in each region of living.

I believe most of the nephrologists and health-care workers in the HD facilities recognize the importance of the aging problem of the HD patient population they face in all of the aging countries. So far nephrologists have developed and promoted the same standard and/or goal like the use of Kt/V to realize the ideal HD in each patient over the world, but conclusively I suggest that we should shift the ideal or beneficial method of HD and the way of support in the aged population from the uniform way covering all of the adult patients to the tailor-made way which is flexibly considered and adjusted to each situation as well as physical and mental conditions, respectively. I strongly feel the time has come when we should make a paradigm shift in every respect of HD, facing the highly aged society.

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